Σ 2438.

R.A. $18^h 56^m$ Dec. $+58° 5'$

Discovered by Herschel in 1782, and re-examined the next year. Re-measured by Sir John Herschel in 1830, and afterwards followed by several observers. As periastron was passed about 25 years ago, it will be many years before the present elements can be improved. The eccentricity is higher than that of any other known double star except Σ 2525.

P =	233·0 years	☊	indeterminate
T =	1882·50	ι =	0°·0
e =	0·916	λ =	178·3 = Periastron
a =	0″·53		

Secchi 2 = Σ 2481 BC.

R.A. $19^h 8^m$ Dec. $+38° 36'$

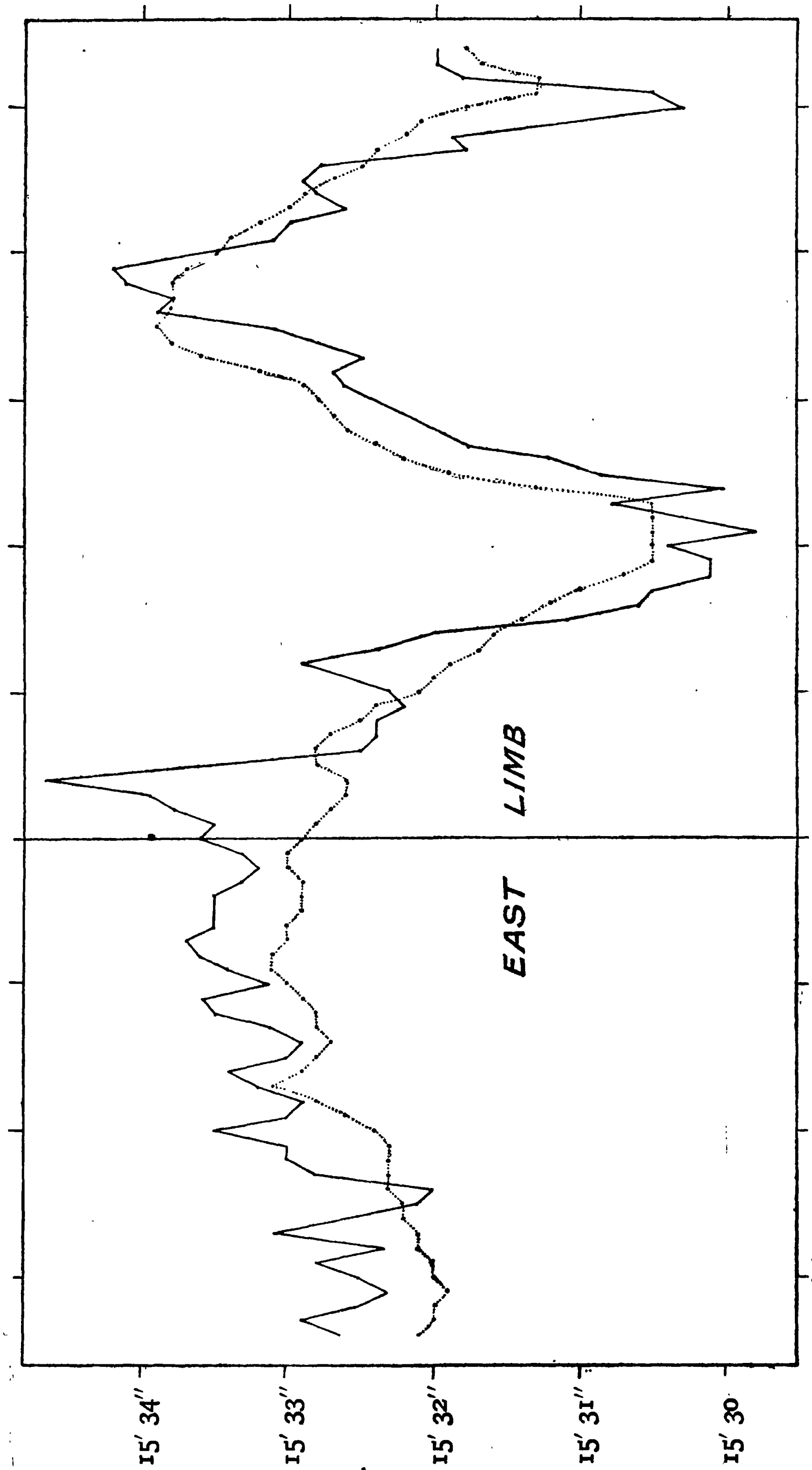
The companion of Σ 2481, found to be a close double by Secchi in 1858. Measured by Otto Struve in 1866, and by Schiaparelli in 1876; there are no measures between 1881 and 1897, since which time it has been followed by Aitken. Aitken's angles before 1901 are altered by 180°.

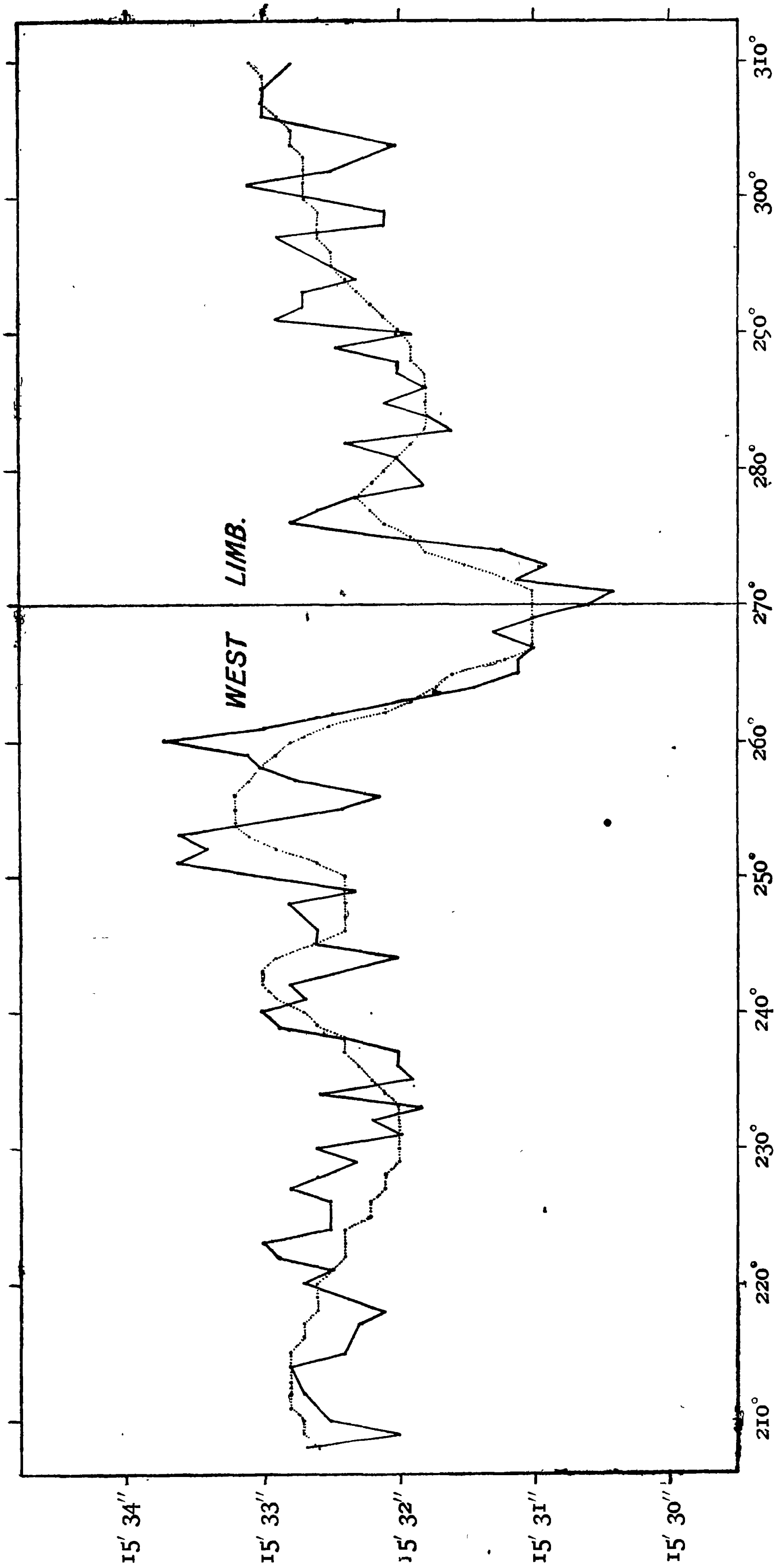
P =	16·0 years	☊ =	109°·7
T =	1902·25	ι =	63·5
e =	0·68	λ =	218·3
a =	0″·39		

The Radius of the Moon for libration $-4°·5$. By Walter Heath.

Dr. L. Struve, in his reduction of the occultations observed during the lunar eclipses of 1884 and 1888 (*Dorpat Observatory Publications*, vol. xx.), made a table of the values of the radius of the Moon's limb at different position-angles; a similar table was published by me last year (*Ast. Nach.*, 4206), including more observations, the geocentric libration in longitude being within the limits $-3°·3$ and $-5°·3$.

I have drawn the diagrams below in order to compare the figures in this table with the results obtained by Dr. Hayn from his micrometer measurements at the Leipzig Observatory (*Selenographische Koordinaten*, III Abhandlung, Leipzig, 1907). In the diagrams the figures at the side are for measuring the radius, and those at the bottom denote position-angles; the dotted line shows the values taken from Dr. Hayn's table, and the other line indicates the occultation results. The zero from which the occultation radius is measured is the Moon's centre as determined


EAST LIMB
60°
70°
80°
90°
100°
110°
120°
130°
140°
15′ 34″
15′ 33″
15′ 32″
15′ 31″
15′ 30″


WEST LIMB.
310°
300°
290°
280°
270°
260°
250°
240°
230°
220°
210°
15′ 34″
15′ 33″
15′ 32″
15′ 31″
15′ 30″

by Dr. Struve from the occultations of 1884; and in order to compare the curves, I have supposed this point to be the zero for Dr. Hayn's measurements, and that the "mean level" which he adopts as a standard is at 15′ 32″·5 in the diagram.

The occultation curve is compounded of the curves representing the groups of results for 1884 and 1888 and some smaller groups. If the declination of the Moon's centre in respect of any group is corrected, the curve for that group will be turned about the east or west point of the limb; the east and west points for the eclipse of 1884 are at position-angles 114° and 294°, and those for the eclipse of 1888 are at 73° and 253°.

Uplands, Cobham, Surrey:
1908 *June* 7.

The Lunar Bright Rays. By H. G. Tomkins.

It is with some hesitation that I venture to add to the numerous theories which have at one time or another been put forward regarding the lunar bright rays, and my excuse must be the close analogy which exists between them and certain terrestrial phenomena, and the ease with which it can be applied to the Moon.

The present explanation is based, firstly, on the assumption that the configuration of the ray systems may be due to a cause separate from their albedo; secondly, that similar configurations appear to exist on the Earth; and thirdly, that a terrestrial analogy to the white material of the rays is also available.

Taking the albedo first, I am led to think that this can be explained on the supposition that the white material consists of the soluble saltsof sodium and other minerals contained in the lunar crust. In the case of the Earth, these salts are brought to the surface by evaporation in a great many parts of the globe. The salts originally exist below the surface, either in the shape of beds of solid salt or salt-impregnated strata; and when they come into contact with the subsoil water, they rise to the surface in solution, and, on the drying up of the water, are left as a white efflorescence. In arid parts such as are found in North India and Persia, the efflorescences are very abundant, and a map of the tracts in the countries named exhibits a distinct tendency towards a radial formation, one of the strips extending about 800 miles towards Bengal from the Salt Range. In Germany also, though, owing to a temperate climate, efflorescences do not occur on a large scale, the brine springs, indicating the presence of the salts, have a distinctly radial configuration. In these cases the white material and the radial formations appear to occur together. This, however, need not always happen, and, as a matter of fact, in many countries the efflorescences do not seem to show any radial tendency, and, on the other hand, radial configurations sometimes appear without efflorescences. This is easily explained when the